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(54) **Iridium conductive electrode/barrier structure and method for same**

(57) A conductive barrier, useful as a ferroelectric capacitor electrode, having high temperature stability has been provided. This conductive barrier permits the use of Iridium (Ir) metal in IC processes involving annealing. Separating silicon substrate from Ir film with an intervening, adjacent, tantalum (Ta) film has been found to very effective in suppressing diffusion between layers. The Ir prevents the interdiffusion of oxygen into the silicon during annealing. A Ta or TaN layer prevents the

diffusion of Ir into the silicon. This Ir/TaN structure protects the silicon interface so that adhesion, conductance, hillock, and peeling problems are minimized. The use of Ti overlying the Ir/TaN structure also helps prevent hillock formation during annealing. A method of forming a multilayer Ir conductive structure and Ir ferroelectric electrode are also provided.

EP 1 035 588 A3

EP 1 035 588 A3

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## EUROPEAN SEARCH REPORT

Application Number  
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Incl. 7)
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X	US 5 668 040 A (BYUN) 16 September 1997 (1997-09-16) * column 3, line 29 - line 64; figure 1A *	1, 3-6, 9, 11, 14, 15, 24, 28	
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A	LEE W-J ET AL: "Ir and Ru bottom electrodes for (Ba, Sr)TiO <sub>3</sub> thin films deposited by liquid delivery source chemical vapor deposition" PREPARATION AND CHARACTERIZATION, ELSEVIER SEQUOIA, NL, vol. 323, no. 1-2, 22 June 1998 (1998-06-22), pages 285-290, XP004147981 ISSN: 0040-6090 * the whole document *	22-24	TECHNICAL FIELDS SEARCHED (Incl. 7) H01L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 January 2002	Examiner Bailliet, B
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EP 1 035 588 A3

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  O : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1833 (3.02) (P04001)

EP 1 035 588 A3

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